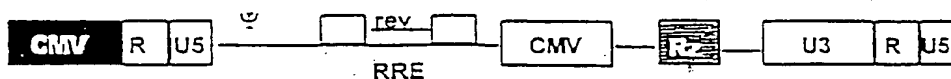


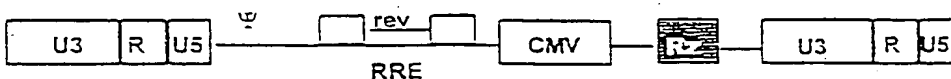
Figure 1

## pH4Rz

Plasmid



Integrated vector



Vector genomic  
RNA / Ribozyme  
Ribozyme

## pH4.1Rz

Plasmid



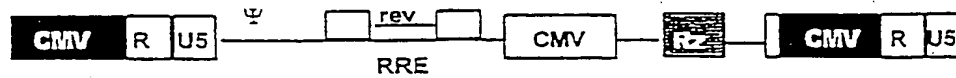
Integrated vector



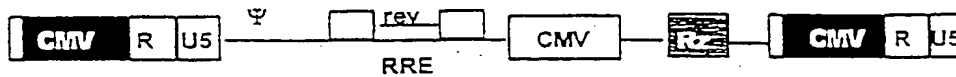
Vector genomic  
RNA / Ribozyme

## pH6Rz

Plasmid



Integrated vector



Vector genomic  
RNA / Ribozyme  
Ribozyme

## pH6.1Rz

Plasmid

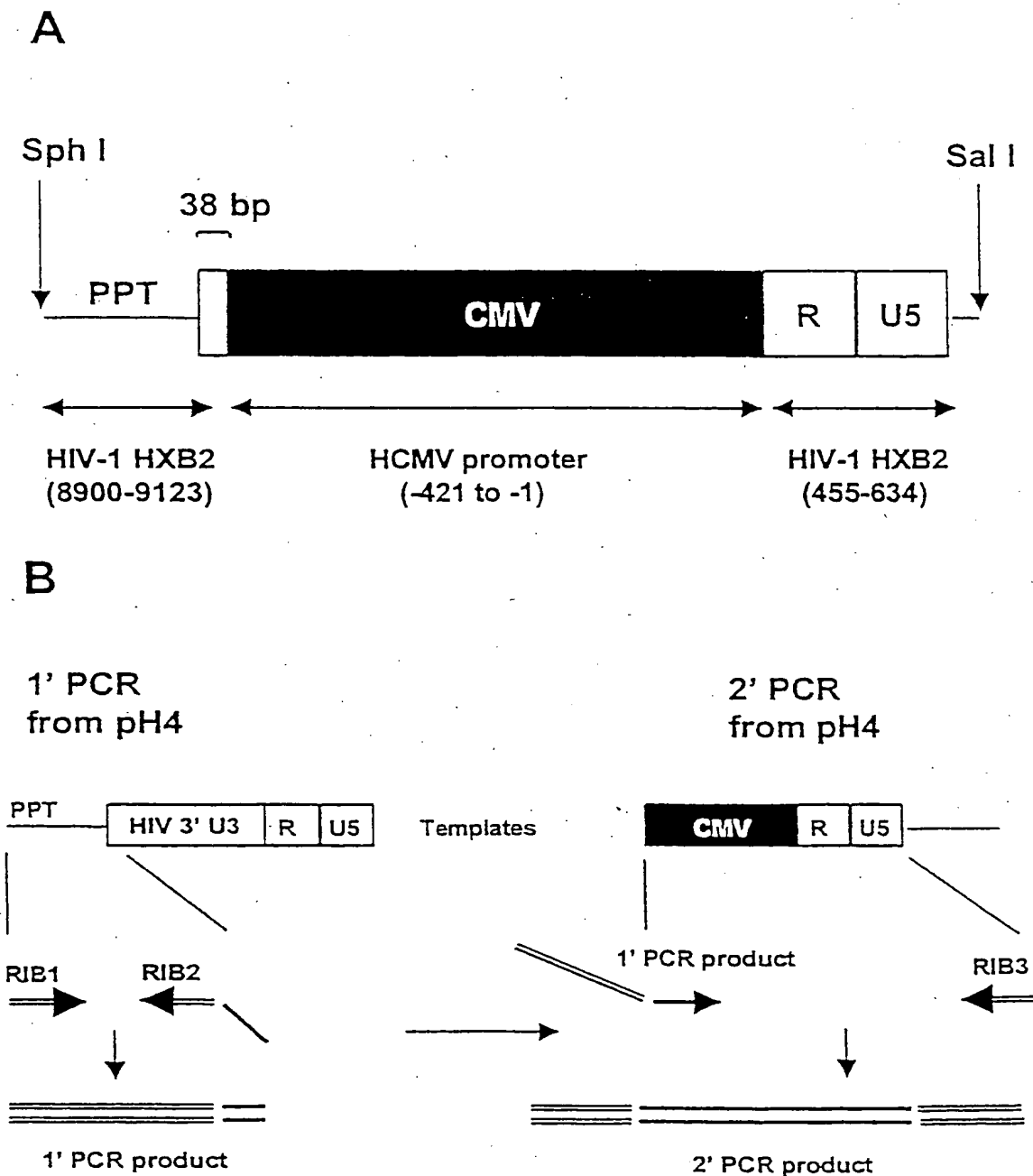


Integrated vector



Vector genomic  
RNA / Ribozyme

figure 2



Title: ANTI-VIRAL VECTORS  
 Inventor(s): Mark UDEN et al.  
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Figure 3

gagpol-HXB2 -> Codon Usage

DNA sequence 4308 b.p. ATGGGTGCGAGA ... GATGAGGATTAG linear

1436 codons

MW : 161929 Dalton CAI(S.c.) : 0.083 CAI(E.c.) : 0.151

TTT phe F	21	TCT ser S	3	TAT tyr Y	30	TGT cys C	18
TTC phe F	14	TCC ser S	3	TAC tyr Y	9	TGC cys C	2
TTA leu L	46	TCA ser S	19	TAA och Z	-	TGA opa Z	-
TTG leu L	11	TCG ser S	1	TAG amb Z	1	TGG trp W	37
CTT leu L	13	CCT pro P	21	CAT his H	20	CGT arg R	-
CTC leu L	7	CCC pro P	14	CAC his H	7	CGC arg R	-
CTA leu L	17	CCA pro P	41	CAA gln Q	56	CGA arg R	3
CTG leu L	16	CCG pro P	-	CAG gln Q	39	CGG arg R	3
ATT ile I	30	ACT thr T	24	AAT asn N	42	AGT ser S	18
ATC ile I	14	ACC thr T	20	AAC asn N	16	AGC ser S	16
ATA ile I	56	ACA thr T	43	AAA lys K	88	AGA arg R	45
ATG met M	29	ACG thr T	1	AAG lys K	34	AGG arg R	18
GTT val V	15	GCT ala A	17	GAT asp D	37	GGT gly G	11
GTC val V	11	GCC ala A	19	GAC asp D	26	GGC gly G	10
GTA val V	55	GCA ala A	55	GAA glu E	75	GGA gly G	61
GTG val V	15	GCG ala A	5	GAG glu E	32	GGG gly G	26

Title: ANTI-VIRAL VECTORS  
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Figure 4

gagpol-SYNgp [1 to 4308] -> Codon Usage

DNA sequence 4308 b.p. ATGGGCGCCCGC ... GATGAGGATTAG linear

1436 codons

MW : 161929 Dalton CAI(S.c.) : 0.080 CAI(E.c.) : 0.296

TTT phe F	5	TCT ser S	5	TAT tyr Y	10	TGT cys C	6
TTC phe F	30	TCC ser S	11	TAC tyr Y	29	TGC cys C	14
TTA leu L	2	TCA ser S	4	TAA OCH Z	-	TGA OPA Z	-
TTG leu L	7	TCG ser S	6	TAG AMB Z	1	TGG trp W	37
CTT leu L	3	CCT pro P	14	CAT his H	6	CGT arg R	2
CTC leu L	22	CCC pro P	39	CAC his H	21	CGC arg R	34
CTA leu L	6	CCA pro P	10	CAA gln Q	14	CGA arg R	3
CTG leu L	70	CCG pro P	13	CAG gln Q	81	CGG arg R	10
ATT ile I	17	ACT thr T	11	AAT asn N	13	AGT ser S	7
ATC ile I	79	ACC thr T	48	AAC asn N	45	AGC ser S	27
ATA ile I	4	ACA thr T	13	AAA lys K	25	AGA arg R	7
ATG met M	29	ACG thr T	16	AAG lys K	97	AGG arg R	13
GTT val V	5	GCT ala A	15	GAT asp D	19	GGT gly G	10
GTC val V	27	GCC ala A	56	GAC asp D	44	GGC gly G	54
GTA val V	6	GCA ala A	13	GAA glu E	29	GGA gly G	16
GTG val V	58	GCG ala A	12	GAG glu E	78	GGG gly G	28

Figure 5

env-mn [1 to 2571] -&gt; Codon Usage

DNA sequence 2571 b.p. ATGAGAGTGAAG ... GCTTTGCTATAA linear

857 codons

MW : 97078 Dalton CAI(S.c.) : 0.083 CAI(E.c.) : 0.140

TTT phe F	13	TCT ser S	7	TAT tyr Y	15	TGT cys C	16
TTC phe F	11	TCC ser S	3	TAC tyr Y	7	TGC cys C	5
TTA leu L	20	TCA ser S	13	TAA OCH Z	1	TGA OPA Z	-
TTG leu L	17	TCG ser S	2	TAG AMB Z	-	TGG trp W	30
CTT leu L	9	CCT pro P	5	CAT his H	8	CGT arg R	-
CTC leu L	11	CCC pro P	9	CAC his H	6	CGC arg R	2
CTA leu L	12	CCA pro P	12	CAA gln Q	22	CGA arg R	1
CTG leu L	15	CCG pro P	2	CAG gln Q	19	CGG arg R	1
ATT ile I	21	ACT thr T	16	AAT asn N	50	AGT ser S	18
ATC ile I	10	ACC thr T	14	AAC asn N	13	AGC ser S	11
ATA ile I	32	ACA thr T	28	AAA lys K	32	AGA arg R	30
ATG met M	17	ACG thr T	5	AAG lys K	14	AGG arg R	15
GTT val V	8	GCT ala A	16	GAT asp D	18	GGT gly G	10
GTC val V	9	GCC ala A	7	GAC asp D	14	GCC gly G	6
GTA val V	26	GCA ala A	20	GAA glu E	36	GGA gly G	28
GTG val V	12	GCG ala A	5	GAG glu E	10	GGG gly G	12

Figure 6

SYNsp160mn -&gt; Codon Usage

DNA sequence 2571 b.p. ATGAGGGTGAAG ... GCGCTGCTGTAA linear

857 codons

MW : 97078 Dalton CAI(S.c.) : 0.074 CAI(E.c.) : 0.419

TTT phe F	-	TCT ser S	2	TAT tyr Y	1	TGT cys C	-
TTC phe F	24	TCC ser S	4	TAC tyr Y	21	TGC cys C	21
TTA leu L	-	TCA ser S	-	TAA och Z	1	TGA opa Z	-
TTG leu L	-	TCG ser S	-	TAG amb Z	-	TGG trp W	30
CTT leu L	-	CCT pro P	-	CAT his H	2	CGT arg R	1
CTC leu L	20	CCC pro P	26	CAC his H	12	CGC arg R	36
CTA leu L	1	CCA pro P	-	CAA gln Q	-	CGA arg R	-
CTG leu L	63	CCG pro P	2	CAG gln Q	41	CGG arg R	4
ATT ile I	2	ACT thr T	-	AAT asn N	2	AGT ser S	-
ATC ile I	61	ACC thr T	59	AAC asn N	61	AGC ser S	48
ATA ile I	-	ACA thr T	-	AAA lys K	1	AGA arg R	2
ATG met M	17	ACG thr T	4	AAG lys K	45	AGG arg R	6
GTT val V	-	GCT ala A	-	GAT asp D	2	GGT gly G	1
GTC val V	1	GCC ala A	40	GAC asp D	30	GGC gly G	47
GTA val V	1	GCA ala A	-	GAA glu E	3	GGA gly G	-
GTG val V	53	GCG ala A	8	GAG glu E	43	GGG gly G	8

FOI b7E 2259660

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PCT/GB00/01002

Figure 7

# HIV Constructs

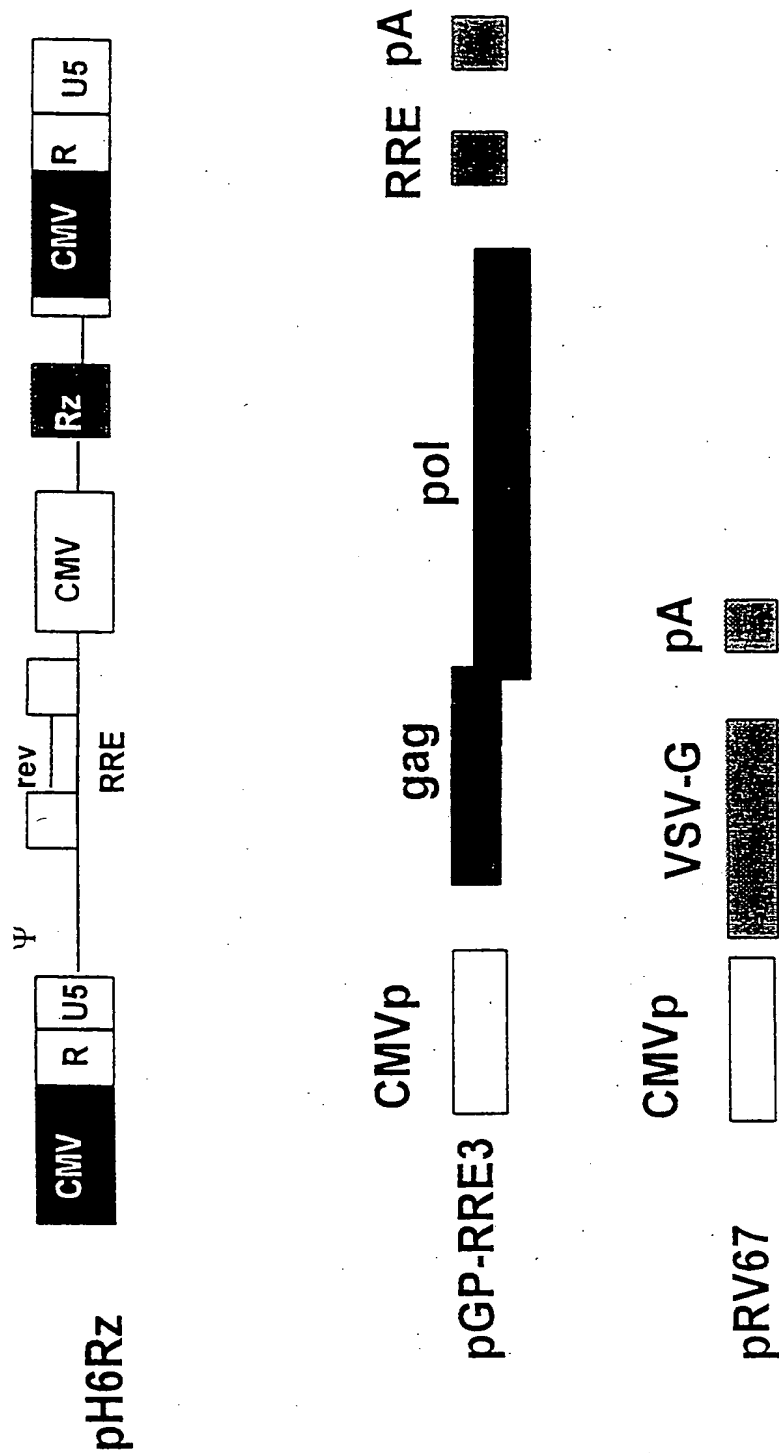
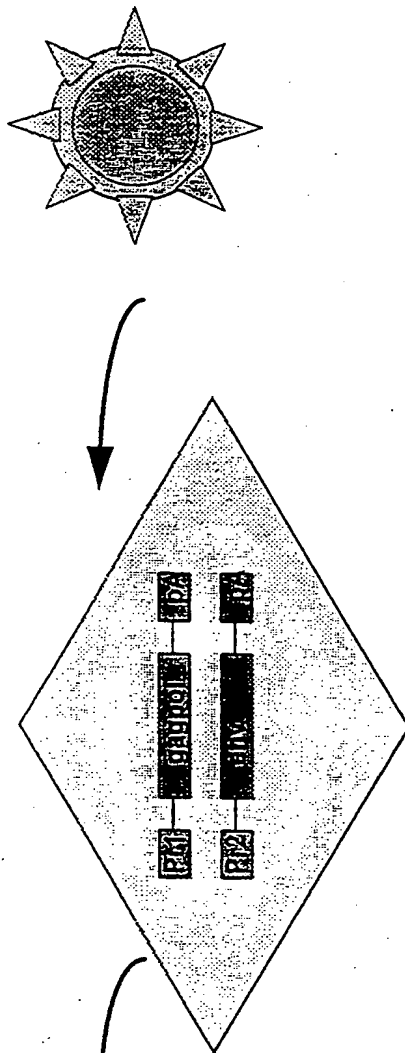


Figure 8

# The Hit Vector System

## Helper packaging cell lines

Vector genome construct



## Three-plasmid cotransfection (HIT)

Vector genome construct



Pr1 gagpol pA



Pr2 env pA



e.g. 293T, COS

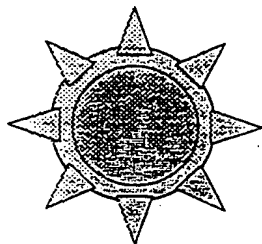
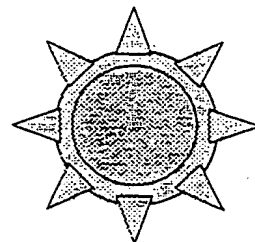
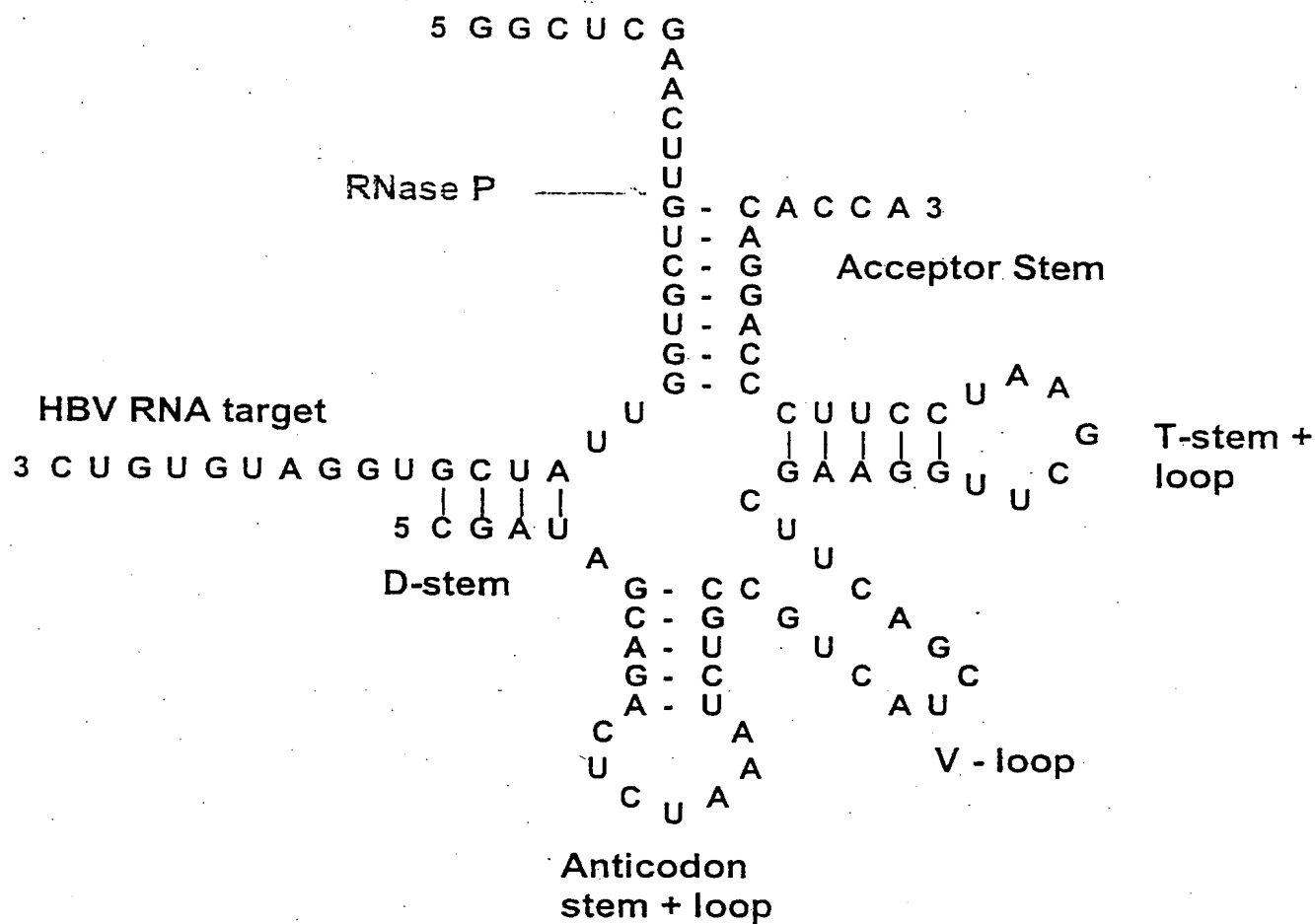




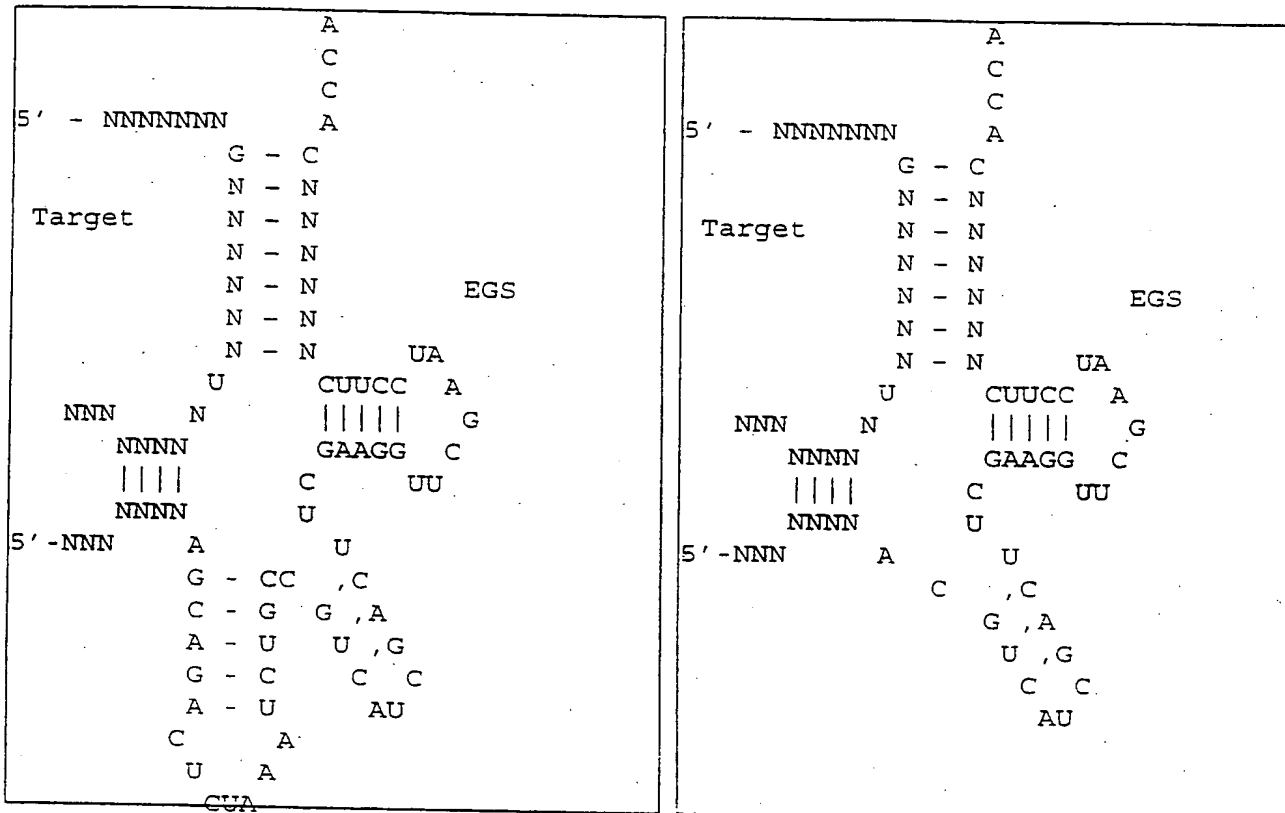
Figure 9 A



EGS Based on Tyrosyl t-RNA

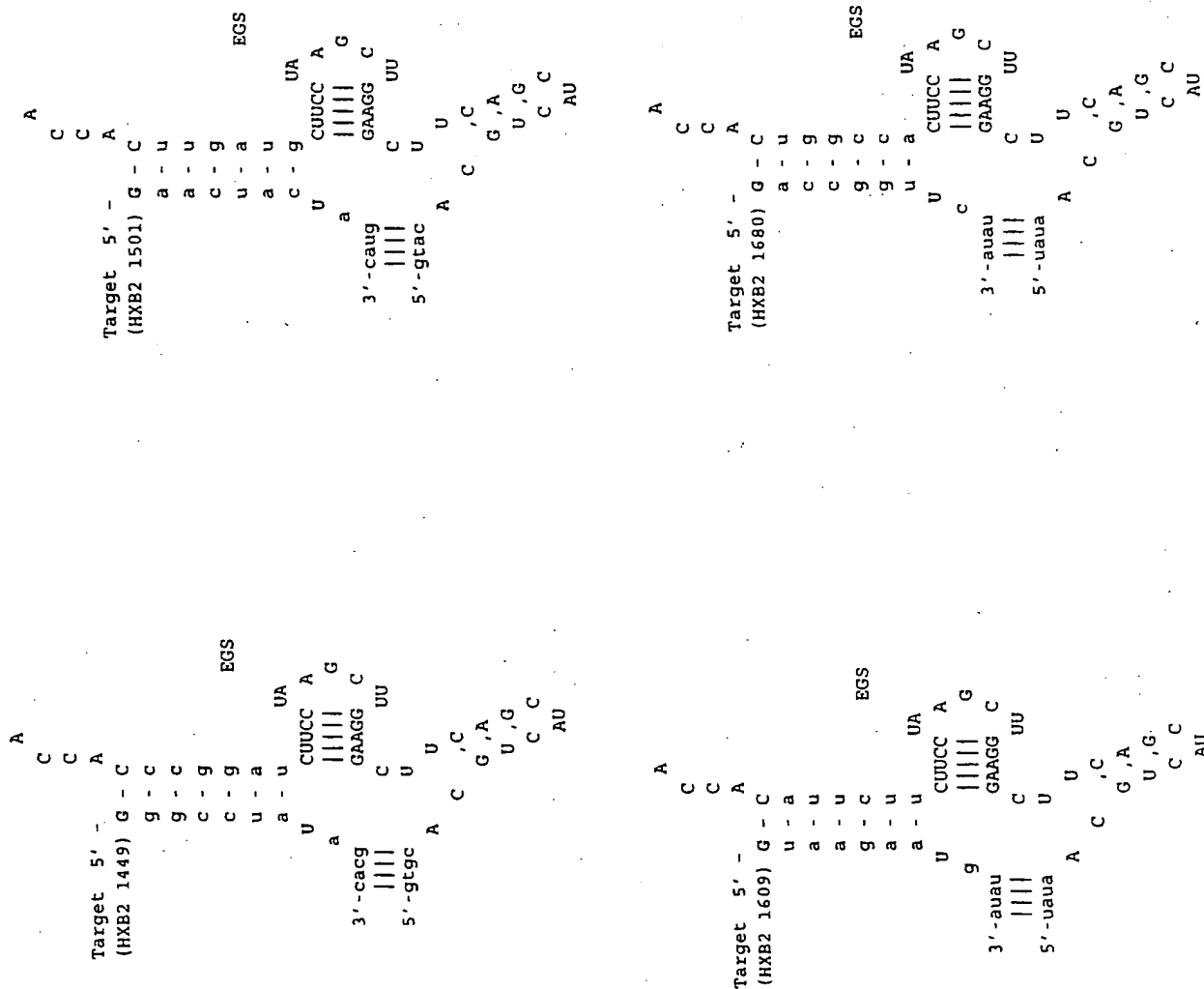
Figure 9 B

Generic design of EGSs to target any RNA.



Target 2259E660

Figure 10 A

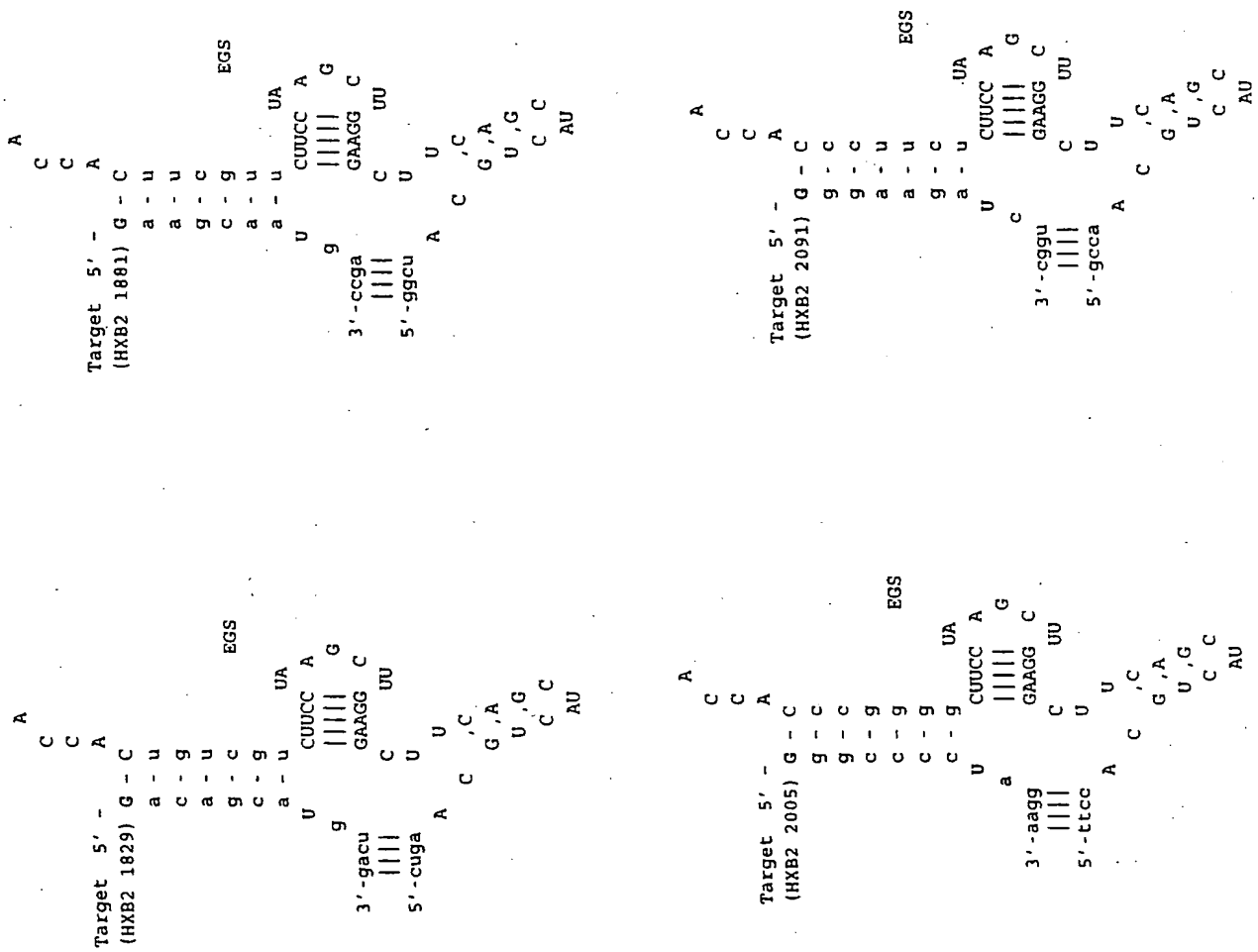


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Figure 10 B



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DOCKET NO.: 078883-0137

PCT/GB00/01002

FIGURE 10 C

Figure 10 C

